

Abstract Submitted
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Atmospheric Flow through Urban Street Canyons H.J.S. FERNANDO, DRAGAN ZAJIC, RONALD CALHOUN, Arizona State University — Flow and turbulence through a network of urban street canyons (streets located within large buildings) were studied during two large-scale field experiments: the Mock Urban Setting Test (MUST-2000) at the US Army Dugway Proving Grounds and the Joint-Urban 2003 field experiment in Oklahoma City. Instrumented towers and tether sondes deployed by the authors and several other groups were analyzed in the framework of flow regimes corresponding to each of the sites (“isolated roughness” at Dugway and “skimming flow” at OKC). The results show that the flow patterns are highly sensitive to the approach angle for angles greater than about 5 deg, and that when the flow is normal to the building cluster the canyons are dominated by recirculating flow. The production of turbulence is highest near the ground and near the top of the buildings, and the variations of turbulent shear stresses could be scaled using local similarity variables. The mean flow in the roughness and inertial layers were compared with available theoretical formulations, and the flow in MUST was also studied using numerical simulations.

H.J.S. Fernando
Arizona State University

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